APPELLANT'S BRIEF UNDER 37 C.F.R. § 1.192

Dear Sir:

This Brief is further to the Notice of Appeal filed in this case on June 18, 2003.

I REAL PARTY IN INTEREST

As evidenced by the Assignment Document recorded on January 15, 2002 at Reel 012491, Frame 0954, Ondeo Nalco Company is the real party in interest in this appeal.

II RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences that will directly affect, be directly affected by, or have a bearing on the Board's decision in this appeal.

III STATUS OF CLAIMS

Claims 1-20 are currently pending. Claims 1-20 stand finally rejected in the Office Action dated March 26, 2003.

IV STATUS OF AMENDMENTS

Applicants' Response After Final Action, mailed June 18, 2003 was received by the USPTO mail room, as evidenced by the returned postcard, however, Applicants' do not have a Communication from the Examiner in their case file as to whether this Response After Final Action was entered or considered by the Examiner.

V SUMMARY OF INVENTION

Applicants' invention is a method of tracing drains in a building that begins with a comprehensive building survey in which all existing drains are numbered. A Master Blueprint and a Master Spreadsheet are created using information collected in the building survey. A tracer is used to determine the flow of storm water to and from the building's storm drains. A test location, consisting of a storm manhole or a sanitary manhole is then chosen and water is run continuously through this manhole. A non-toxic fluorescent tracer is added to the target sanitary drain and a sample of the water running through the test location is withdrawn. A fluorometer is used to detect the fluorescent signal of non-toxic fluorescent tracer in the sample of water withdrawn. This procedure is repeated until all test locations have been surveyed and the information recorded on the Master Blueprint and Master Spreadsheet. The information is used to reconfigure drains that are wrongly plumbed such that the replumbed drains are draining to the correct location.

This invention is described in the specification on pages 7-14 and in more detail on pages 15-38.

VI ISSUE

1. Whether Claims 1-20 should be rejected under 35 U.S.C. §103(a) as being unpatentable over Saniford et al. U.S. Patent No. 3,851,151 (hereinafter "Saniford") in view of Azok U.S. Patent No. 5,352,277 (hereinafter "Azok").

VII GROUPING OF CLAIMS

Independent Claim 1, with dependent Claims 2, 3, 13 and 17; independent Claim 4 with dependent Claims 5, 6, 14 and 18; independent Claim 7 with dependent Claims 8, 9, 15 and 19; and independent Claim 10 with dependent Claims 11, 12, 16 and 20 stand together.

VIII ARGUMENTS

A. The rejection of Claims 1-20 under 35 U.S.C. §103(a) as being unpatentable over Saniford et al. U.S. Patent No. 3,851,151 (hereinafter "Saniford") in view of Azok U.S. Patent No. 5,352,277 (hereinafter "Azok") should be withdrawn.

At the outset of these remarks, Applicants feel it is important to respectfully state their position which is: Applicants have invented a new and nonobvious way of tracing drains in a building which provides for *a comprehensive understanding of where the storm and sanitary drains in a building are actually draining*, as compared to where they are "supposed-to-be" draining. In the event no piping blueprints are available, the method of the instant claimed invention enables people skilled in the art to actually create a viable, "snapshot" of how the pipes are currently configured and where each drain actually drains. The instant claimed invention is not simply a method of tracing drains using techniques that are well known in the art or that can be modified slightly from existing methods to teach or suggest the instant claimed invention. The utility of this invention is apparent for all personnel who work in the area of pipes and piping systems.

Further to the point, to the best of Applicants' knowledge, **non-toxic fluorescent tracers, capable of being detected in the water from drains in a drainage system for *an entire building*, by using a *fluorometer*, rather than by using the color of the tracer to visibly locate the tracer in the water, *have not been used to trace drains throughout a building* in the manner described and claimed in the instant claimed patent application.**

A distinct, discernable and dramatic difference between the instant claimed invention and the invention taught and claimed in Saniford is that the desired outcome and processes studied in the instant claimed invention are the opposite of those described in Saniford. In the instant claimed

invention, the primary goal is to determine whether impermeable pipes making up a network of sanitary and storm drains in a building are connected correctly or whether they are incorrectly connected leading to undesired consequences. In Saniford, fluids are pumped under pressure into underground reservoirs to force out valuable materials, whereas in the instant claimed invention, water flows by gravity in and out of pipes that are both above and below ground. After leaks and drain system cross-connections are found, elimination of that leak is a step of the process claimed in dependent Claim 2. There is no analogous step of preventing unwanted flow in Saniford, rather in Saniford there is only the stated goal to increase fluid flow between two points. Therefore, the desired outcome and processes studied in the instant claimed invention are the opposite of those described above in Saniford and a person of ordinary skill in the art would not look to the teachings of Saniford to divine the elements of the instant claimed invention.

In contrast to the new and nonobvious method of the instant claimed invention, Saniford discusses tracing the flow of water through a *natural subterranean formation*, not through a *man-made building's storm and sanitary drainage* system. Even though Saniford does suggest that the invention could possibly be used to trace the origin of water from any source, Saniford does not provide enough information to enable a person of ordinary skill in the art to use a non-visible fluorescent tracer to trace water through pipes in a pipeline and sewer network throughout a building and record the information in a useful fashion .

In further contrast to the method of the instant claimed invention, Saniford does not use a fluorescent tracer, rather Saniford uses a "water-soluble substituted poly(hydroxyalkyl) bis (triazinylamino)stilbene" tracer which is detected by first exposing a sample of the water to an ultraviolet light causing the material to luminesce visibly. This visible luminescence is in line with standard "visible dye" tracing techniques which are well known in the art. In contrast to Saniford

the instant claimed invention uses a fluorescent tracer, which does not require an operator to make a visible evaluation as to whether the fluorescent tracer is present in the water sample. The lack of requirement for the use of visible detection methods is a huge advantage over the prior art and must be considered a useful, patentable invention.

Further to this point, the nature of the compounds which are suitable to be used as tracers are different in Saniford from those in the instant claimed invention. The differences are largely based on the nature of interferences encountered. This is very dependent upon the application area being measured and a chemistry or technique which is suitable in one area (e.g., subterranean flow tracing – Saniford) very likely will be unacceptable in another area (drain tracing – the instant claimed invention). The types of interferences encountered in the instant claimed invention, include, but are not limited to, high levels of suspended solids wherein these solids can be different in size and shape and chemical composition, oxidizing biocides, passage of leaking water through soil that may absorb some types of dyes and even rapidly changing flowrates. In Saniford, the most likely interferences to detection of the fluorescent signal of the tracer are crude oil, adsorption on rock surfaces, and the like (column 1, lines 28-31). Those interferences which determine what tracer materials and analytical methods are suitable are totally different than those encountered in drain tracing applications. Therefore, the conclusion reached is that there is no indication that the tracer materials listed or suitable for use in Saniford are acceptable for other applications and no criteria are provided to determine there specific suitability for use in the method of the instant claimed invention.

Saniford describes use of stilbene-based tracers through a rock formation with the stated goal being to find which locations are connected through flow patterns in large underground fluid bodies as the result of fluids specifically added (pumped under pressure) into that large underground fluid body (column 1, lines 5-20). The nature of these water-flood oil recovery systems is such that use of

only one tracer could produce interferences with itself due to overlapping flow patterns from different fluid injection and withdrawal points (column 1, lines 36-47). In the instant claimed invention, only one type of tracer is required to evaluate many thousands of drains.

Regarding the Examiners' conclusary statement that it would have been obvious for one skilled in the art to Survey a building, number the drains, create a Master Blueprint and a Master Plan and recording all information on them, Applicants respectfully disagree. These steps are not obvious items "tacked on" to ancient techniques in the art of tracing the flow of water, but rather all of these steps ***are an integral part of the claimed process*** that allows for a comprehensive survey of an entire building's storm and sanitary drains wherein the gathering of the information is conducted in such a way ***as to make the information collected be in the most useful form possible*** to the people seeking to understand the actual flow patterns of the drains in a particular building.

The analysis procedure used in the instant claimed invention is very different from that required in Saniford (column 1, line 35-68). The following discrete steps in analytical procedure are described in Saniford:

- Fluid sample has to be cleaned to remove crude oil and other types of interferences.
- Tracer from fluid samples is adsorbed onto filter paper in order to significantly increase the concentration of the tracer to make the tracer detectable to the unaided eye.
- The tracer concentration is measured on grab samples evaluated at a test bench.
- The tracer concentration is qualitatively estimated by visual comparison.
- A hand-held UV lamp is used to illuminate filter paper samples, which further makes results qualitative because level of luminescence is related to amount of light falling on samples (distance of lamp, angle of lamp and observation, etc.).

Saniford indicates this invention could be used for measuring flow of water through pipeline and a sewer network, ... or even from leakage of water from tanks, dams, pipelines, etc (column 4,

lines 1-5). However, based on the requirements to evaluate each sample, the Saniford invention would be unworkable in practice for use in evaluating the absence or presence of interconnections between sanitary and storm sewers. Large numbers of grab samples would be required per drain and many, many, many drains would need to be tested.

In contrast to the techniques described in Saniford, the instant claimed invention allows for the following:

- A detailed evaluation of system drawings and blueprints to distill thousands of possible sanitary drains and thousands of possible storm sewer drains/sampling points (millions of possible testing combinations) down into a tractable set of testing conditions for each sanitary/storm drain combination.
- The use of continuous sampling to ensure that rapid passage of tracer spike is not missed.
- The ability to make a quantitative measurement of tracer dosage to help determine the significance of a leak.
- The continuous monitoring and datalogging of fluorescence to further ensure that absence or presence of leakage is confirmed.

Therefore, based on the above discussion, Applicants do not feel that the invention described and claimed in Saniford should be used to render the instant claimed invention unpatentable and respectfully request the withdrawal of this rejection and that a Notice of Allowance be sent for all pending claims.

Azok teaches and claims a process for tracing liquid flow, comprising providing a dye-impregnated paper strip, putting the paper strip in water, having the colored tracing dye diffuse out of the paper strip into the water and then visually observing the flow of colored liquid within the vessel containing the water. The analysis of Azok is similar to that of Saniford in that one of the many reasons that Azok cannot be used to render the instant claimed invention obvious is that Azok provides a tracer material which requires a visual analytical method. Furthermore, Azok cannot be used to render the instant claimed invention obvious because Azok does not discuss and provide

solutions to the unique problems associated with determining the flow pattern of both storm and sanitary drains in an existing building.

Azok primarily describes the preparation of a dye-impregnated water soluble paper as a means of dispensing dyes. The use of paper strips to deliver tracers (Azok) is no part of the invention described and claimed in the instant patent application. This is highly advantageous in practicing the method of the instant claimed invention because many drains to be tested are located outside, on building roofs, and in the middle of large populated areas. The use of water soluble dye strips creates a significant risk of dye spills under certain circumstances – for example the dye strip may prematurely release dye if used when under raining or humid conditions. The presence of moisture on the hands of the person doing the testing may also create a situation where dye is released prematurely or in an undesirable way. In contrast, the method of the instant claimed invention can be conducted even during torrential rain storms because the use of liquid tracer solution allowed the studies to continue be carried on without risk of undesirable release of tracer dye.

Although Azok describes leak detection, it does not provide any consideration or guidance on key aspects such as interferences to use of certain tracer materials and/or analytical methods. For example, there is no indication in Azok of the need to use continuous sampling and continuous monitoring in order to ensure that the absence (or presence) of a leak or cross-connection between storm and sanitary drain lines is unequivocally determined, which is included in the instant claimed invention. For the most part the method of Azok has its greatest utility in very simplistic systems such as water leaking from the toilet reservoir into the bowl. This is very far removed from typical drain systems which contain multiple and (unwanted) overlapping drains, hundreds or more of pipes and hundreds or more of sampling points. This results in literally millions of possible testing

combinations. **Only the methods and procedures described in the instant claimed invention make surveying, evaluating, measuring, and fixing those systems possible.**

Based on the above discussion, Applicants do not feel that the invention described and claimed in Azok should be used to render the instant claimed invention unpatentable and respectfully request the withdrawal of this rejection and that a Notice of Allowance be sent for all pending claims.

The Saniford and Azok patents are both in different search classification (Saniford in 250/259 and Azok in 8/506); therefore they are viewed by the USPTO as belonging to two separate areas of technology. Therefore, there is no suggestion in these two references to combine their teachings to teach or disclose the instant claimed invention. Furthermore, Applicants wish to respectfully make the point that it appears to them to be common sense to state that a person of ordinary skill in that area could not reasonably be expected to seek out such differently classified references and use them to develop the method of the instant claimed invention.

Even if these references were improperly combined, they still do not teach or suggest the instant claimed invention because there is no teaching in either reference separately or in both references when combined that suggests a method of tracing drains that provides solutions to the unique problems associated with determining the flow pattern of both storm and sanitary drains in an existing building.

IX CONCLUSION

In conclusion, Applicants do not feel that the inventions described and claimed in Saniford and in Azok can be used either separately or in combination to render the instant claimed invention patentably obvious and respectfully request the withdrawal of all rejections based on these references. Applicants also request that a Notice of Allowance be sent for all pending claims.

Respectfully submitted,

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X APPENDIX OF CLAIMS

1. A method of tracing drains in a building comprising:

(1) surveying the building to locate all existing drains;

(2) numbering all of the existing drains;

(3) creating a Master Blueprint and a Master Spreadsheet showing all of the drains;

(4) using a tracer to determine whether the storm water from the building actually flows from each storm drain to the storm water manhole and recording the information determined about the flow pattern of each storm drain tested on the Master Blueprint and on the Master Spreadsheet;

(5) selecting the test location to withdraw the sample of water, wherein said test location is selected from the group consisting of all storm manholes and all sanitary manholes;

(6) running water continuously through a drain that drains into the test location manhole selected in Step (5);

(7) selecting a target sanitary drain and adding an amount of non-toxic fluorescent tracer to the target sanitary drain, wherein the amount of non-toxic fluorescent tracer added is such that the fluorescent signal of non-toxic fluorescent tracer is detectable over the background fluorescence of the water in said sanitary drain;

(8) using a fluorometer to detect the fluorescent signal of said non-toxic fluorescent tracer in the sample of water withdrawn at the test location selected in Step (5);

(9) using the fluorescent signal to determine whether the target sanitary drain is draining to the test location selected in Step (5) and recording the information determined about the flow pattern of said target sanitary drain on the Master Blueprint and on the Master Spreadsheet;

(10) repeating Steps (4), (5), (6), (7), (8) and (9) as necessary such that all sanitary drains are traced; and

(11) using the information from the Master Blueprint and Master Spreadsheet to determine where all sanitary drains and storm drains are draining.

2. The method of Claim 1 further comprising:

(12) effecting repairs to the building such that the drains tested are configured such that they drain to their intended location.

3. The method of Claim 2 further comprising:

(13) retesting the drains using the method of Steps (4) through (11) to ensure that all drains are now draining to their intended location.

4. A method of tracing drains in a building comprising:

(1) surveying the building to locate all existing drains;

(2) numbering all of the existing drains;

(3) creating a Master Blueprint and a Master Spreadsheet showing all of the drains;

(4) using a tracer to determine whether the storm water from the building actually flows from each storm drain to the storm water manhole and recording the information determined about the flow pattern of each storm drain tested on the Master Blueprint and on the Master Spreadsheet;

(5) selecting the test location to withdraw the sample of water, wherein said test location is selected from the group consisting of all storm manholes and all sanitary manholes;

(6) running water continuously through a drain that drains into the test location manhole selected in Step (5);

(7) selecting a target sanitary drain and adding an amount of non-toxic fluorescent tracer to the target sanitary drain, wherein the amount of non-toxic fluorescent tracer added is such that the concentration of non-toxic fluorescent tracer is at least about 600 ppm in the water in said target sanitary drain;

(8) using a fluorometer to detect the fluorescent signal of said non-toxic fluorescent tracer in the sample of water withdrawn at the test location selected in Step (5);

(9) using the fluorescent signal to determine whether the target sanitary drain is draining to the test location selected in Step (5) and recording the information determined about the flow pattern of said target sanitary drain on the Master Blueprint and on the Master Spreadsheet;

(10) repeating Steps (4), (5), (6), (7), (8) and (9) as necessary such that all sanitary drains are traced; and

(11) using the information from the Master Blueprint and Master Spreadsheet to determine where all sanitary drains and storm drains are draining.

5. The method of Claim 4 further comprising:

(12) effecting repairs to the building such that the drains tested are configured such that they drain to their intended location.

6. The method of Claim 5 further comprising:

(13) retesting the drains using the method of Steps (4) through (11) to ensure that all drains are now draining to their intended location.

7. A method of tracing drains of interest in a building comprising:

(1) surveying the building to locate the drains of interest;

(2) numbering all of the drains of interest;

(3) creating a Master Blueprint and a Master Spreadsheet showing all of the drains of interest;

(4) using a tracer to determine whether the storm water from the building actually flows from the storm drains of interest to the storm water manhole and recording the information determined about the flow pattern of each storm drain tested on the Master Blueprint and on the Master Spreadsheet;

(5) selecting the test location to withdraw the sample of water, wherein said test location is selected from the group consisting of all storm manholes and all sanitary manholes;

(6) running water continuously through a drain that drains into the test location manhole selected in Step (5);

(7) selecting a target sanitary drain of interest and adding an amount of non-toxic fluorescent tracer to the target sanitary drain of interest, wherein the amount of non-toxic fluorescent tracer added is such that the fluorescent signal of non-toxic fluorescent tracer is detectable over the background fluorescence of the water in said target sanitary drain of interest;

(8) using a fluorometer to detect the fluorescent signal of said non-toxic fluorescent tracer in the sample of water withdrawn at the test location selected in Step (5);

(9) using the fluorescent signal to determine whether the target sanitary drain of interest is draining to the test location selected in Step (5) and recording the information determined about the flow

pattern of said target sanitary drain of interest on the Master Blueprint and on the Master Spreadsheet;

(10) repeating Steps (4), (5), (6), (7), (8) and (9) as necessary such that all sanitary drains of interest are traced; and

(11) using the information from the Master Blueprint and Master Spreadsheet to determine where the sanitary drains of interest and the storm drains of interest, are draining.

8. The method of Claim 7 further comprising:

(12) effecting repairs to the building such that the drains tested are configured such that they drain to their intended location.

9. The method of Claim 8 further comprising:

(13) retesting the drains using the method of Steps (4) through (11) to ensure that all drains are now draining to their intended location.

10. A method of tracing drains of interest in a building comprising:

(1) surveying the building to locate the drains of interest;

(2) numbering all of the drains of interest;

(3) creating a Master Blueprint and a Master Spreadsheet showing all of the drains of interest;

(4) using a tracer to determine whether the storm water from the building actually flows from the storm drains of interest to the storm water manhole and recording the information determined about the flow pattern of each storm drain tested on the Master Blueprint and on the Master Spreadsheet;

(5) selecting the test location to withdraw the sample of water, wherein said test location is selected from the group consisting of all storm manholes and all sanitary manholes;

(6) running water continuously through a drain that drains into the test location manhole selected in Step (5);

(7) selecting a target sanitary drain of interest and adding an amount of non-toxic fluorescent tracer to the target sanitary drain of interest, wherein the amount of non-toxic fluorescent tracer added

is such that the concentration of non-toxic fluorescent tracer is at least about 600 ppm in the water in said target sanitary drain of interest;

(8) using a fluorometer to detect the fluorescent signal of said non-toxic fluorescent tracer from the sample of water withdrawn at the test location selected in Step (5);

(9) using the fluorescent signal to determine whether the target sanitary drain of interest is draining to the test location selected in Step (5) and recording the information determined about the flow pattern of said target sanitary drain of interest on the Master Blueprint and on the Master Spreadsheet;

(10) repeating Steps (4), (5), (6), (7), (8) and (9) as necessary such that all sanitary drains of interest are traced;

(11) using the information from the Master Blueprint and Master Spreadsheet to determine where the sanitary drains of interest and the storm drains of interest are draining.

11. The method of Claim 10 further comprising:

(12) effecting repairs to the building such that the drains tested are configured such that they drain to their intended location.

12. The method of Claim 11 further comprising:

(13) retesting the drains using the method of Steps (4) through (11) to ensure that all drains are now draining to their intended location.

13. The method of Claim 1 in which the tracer used in Step (4) is a visible dye tracer and the non-toxic fluorescent tracer used in Step (7) is selected from the group consisting of 1,3,6,8-pyrenetetrasulfonic acid, tetrasodium salt and 1,5-naphthalenedisulfonic acid, disodium salt.

14. The method of Claim 4 in which the tracer used in Step (4) is a visible dye tracer and the non-toxic fluorescent tracer used in Step (7) is selected from the group consisting of 1,3,6,8-pyrenetetrasulfonic acid, tetrasodium salt and 1,5-naphthalenedisulfonic acid, disodium salt.

15. The method of Claim 7 in which the tracer used in Step (4) is a visible dye tracer and the non-toxic fluorescent tracer used in Step (7) is selected from the group consisting of 1,3,6,8-pyrenetetrasulfonic acid, tetrasodium salt and 1,5-naphthalenedisulfonic acid, disodium salt.

16. The method of Claim 10 in which the tracer used in Step (4) is a visible dye tracer and the non-toxic fluorescent tracer used in Step (7) is selected from the group consisting of 1,3,6,8-pyrenetetrasulfonic acid, tetrasodium salt and 1,5-naphthalenedisulfonic acid, disodium salt.

17. The method of Claim 1 in which the drain chosen in Step (6) to run water continuously through is the drain that takes the longest amount of time to drain to the test location manhole.

18. The method of Claim 4 in which the drain chosen in Step (6) to run water continuously through is the drain that takes the longest amount of time to drain to the test location manhole.

19. The method of Claim 7 in which the drain chosen in Step (6) to run water continuously through is the drain that takes the longest amount of time to drain to the test location manhole.

20. The method of Claim 10 in which the drain chosen in Step (6) to run water continuously through is the drain that takes the longest amount of time to drain to the test location manhole.